City of Norfolk

Department of Planning and Community Development

Policy # Build – 05-04

The traditional method of framing in this region employs the use of both interior and exterior six foot long 6" by 6" girders resting on piers that are spaced approximately 6 feet apart. These 6" by 6" girders support floor framing that in turn, supports additional load above.

Table R502.5(1) in the International Residential Code establishes the allowable spans for Girders and Beams in various loading conditions and spans. Previously, Table 502.3.3a and 502.3.3b in the CABO One and Two Family Dwelling Code provided similar allowable spans for girders and beams. These earlier tables held allowances for using a single 6" by 6" girder supporting floor load. The IRC tables removed such references and limited their girders and beams to built-up members of dimensional lumber (2-2X10, 2-2X12, etc).

Because the reference has been removed, the applicant must use provisions in the International Building Code for design method. Section R301 of the IRC states in part: 301.1.3 Engineered design. When a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise, not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the International Building Code is permitted for all buildings and structures, and parts thereof, included in the scope of this code.

Based on the performance of the 6" by 6" girder in this application over the past 30 years, it is reasonable to predict its performance in modern housing will be acceptable. Performing this design would cause the applicant to employ a professional, whereas no design was needed over the last three decades. However, without a design, this application must limited to certain spans, loading conditions and material strength. These limitations and conditions are as follows:

Beam Size:	6" by 6" girder, 6 feet in overall length.
Loading Conditions:	Uniform load, simply supported at each end.
Material Strength:	Doug Fir Larch #1 (or equal) with the following allowable stresses: Fb=1450 psi Fv= 95 psi E = 1,600,000 psi
1st Floor Load:	Distance between adjacent piers not greater than 6' (3' tributary length) 40 psf live load maximum 10 psf dead load maximum
2nd Floor Load:	Distance between bearing walls not greater than 14' (7' tributary length) 40 psf live load maximum 10 psf dead load maximum
Roof Load:	Distance between bearing walls not greater than 30'(15' tributary length)

A 6" by 6" girder installed in a single family application within these limitations is authorized without a design.

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